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STRATEGY RESEARCH PROJECT

# WHAT'S FOR DINNER? THE ARMY'S PLAN FOR FEEDING THE FORCE BEYOND THE YEAR 2000

BY

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United States Army

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#### ABSTRACT

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Is the Army's plan for feeding the force beyond the year 2000 viable and adequate? In the 21st century, food will become a precious commodity. One that will need to be safeguarded and managed carefully. In order to deal with this dilemma, the Army will need to develop new food initiatives and policies on how to procure, manage, equip and distribute its food supply. This type of managerial oversight must be sustained from the marketplace until the food reaches the customer (soldiers) in the field. The development of new ways to preserve, prepare, store, and deliver food on and off the battlefield is on the horizon. The principles of focused logistics will be used to enable the logistician to provide the battlespace commander the right meal, at the right place, at the right time.

#### TABLE OF CONTENT

ABSTRACT	iii
TABLE OF CONTENTS	v
INTRODUCTION	1
FOCUSED LOGISTICS	2
LOGISTICAL SUBSISTENCE SUPPORT: OPERATIONAL RATIONS	3
Meals Ready to Eat (MRE's)	3
Unitized Group Rations (UGR's)	6
Religious Rations	7
Humanitarian Daily Rations (HDR's)	9
CLASS I AUTOMATION	9
FIELD FEEDING EQUIPMENT IN THE 21st CENTURY	11
GARRISON OPERATIONS	12
Prime Vendor	12
NEW FOOD TECHNOLOGIES	14
What will the Army Eat?	14
Food Irradiation	15
Other New Developments	16
CONCLUSION	18
ENDNOTES	19
BIBLIOGRAPHY	23

#### INTRODUCTION

The challenge that will confront the entire logistics community in the next millennium is the requirement to provide for the sustainability of the warfighters without inhibiting their maneuver. The way in which the Army conducts its food service business must have the flexibility to adapt to the evolutionary changes in warfighting. The traditional methodologies of preparing food in centralized locations and either feeding in groups or attempting to distribute warm, nutritious meals to scattered units, will need to be altered. This will require in some cases, evolutionary as well as revolutionary changes to the ways in which foods are packaged, stored and prepared. There will be a requirement to create new and modified food preparation equipment, enhance training, and change the distribution system, both on and off the battlefield.

"The eating habits of the American soldier(s) will influence some of the changes that will need to occur in the 21st Century. What soldiers eat, will be just as important as where they eat. As the American population becomes more diverse, the various requirements of ethnic and religious preferences will have to be considered and accommodated. These complexities will place additional burdens on the distribution and food preparation functions".

The Army's logistical system, will have to have the robustness to develop, manage, maintain and safeguard an operational ration system, that will sustain soldiers on the modern day battlefield. In recent years, several initiatives have been developed to address the future of garrison operations and the Army Field Feeding System. It was found that there are a number of transitions that must occur to support the soldier in the 21st Century.

While keeping in mind the vision of what is needed for the future success of the Army's logistical system, this paper will provide an overview of where the Army currently stands in the area of logistical subsistence support. There will also be a brief discussion of Focused Logistics,

the cornerstone upon which logistical support will be based. A closer analysis of the Army's Field Feeding System and garrison operations will be done to determine where the Army is today. Issues and concerns, new technologies, new initiatives and their potential impacts will also be addressed. The question, "Is the Army's plan for feeding the force beyond the year 2000 viable and adequate?" will be asked throughout the paper.

#### **FOCUSED LOGISTICS**

The logisticians of the next century will have to compete with the rest of America and perhaps the world for dwindling resources. Therefore, he or she must not only be a skilled operator but an accomplished business person as well. As the Army moves from a strategy of being a forward deployed force to a force projection force, the ability to feed soldiers will becomes even more critical. Consequently, the principles associated with "Focused Logistics" will have to be applied to the strategy for field feeding.<sup>4</sup>

In Logistic Vision for a Revolution in Military Logistics (RML-draft), there is a heavy reliance on Focused Logistics. It is defined as: "The fusion of information, logistics and transportation technologies to provide rapid crisis response, to track and shift assets even while enroute, and to deliver tailored logistics packages and sustainment, directly to the strategic, operational and tactical levels of operation. It will be fully adaptive to the needs of dispersed and mobile forces, providing required Combat Service Support (CSS) in hours or days versus weeks. Focused Logistics will enable joint forces of the future to be more mobile, versatile and able to project from anywhere in the world."

Focused Logistics will be the cornerstone upon which logistics will operate on in the next century. It will mean the development of new doctrine that will provide the logistician with increased agility and flexibility. This concept will enable logisticians, to merge advanced business practices into current logistical theory, and to produce solutions that will quickly resolve logistical problems on and off the battlefield.

## LOGISTICAL SUBSISTENCE SUPPORT: OPERATIONAL RATIONS Meal Ready to Eat

The Meal Ready to Eat (MRE) fits well into the Army's feeding plan for the next century. This plan is called "Army Field Feeding System-Future (AFFS-F)". This is a total system which supports battle doctrine through flexibility in feeding methods. It provides the field commander with the capability of feeding soldiers the right meal, at the right place, at the right time.

The MRE has been a part of the Army's inventory for nearly seventeen years. While this new high-technology ration is superior in many ways to its predecessor (the C-Ration), it has not managed to escape the sharp scrutiny of the American soldier. Initially, the MRE was a basic ration with little variety and lacked flavor appeal among troops. Therefore, soldiers were prone to bringing supplemental foods (more commonly known as poggy bait) to the field, which was not practical and should not be practiced. This caused the scientists at the United States Army Research Development and Engineer Center (Natick) to go back to the drawing board and develop several additional (type) MRE meals. Although, this made the meals more acceptable, they still did not enjoy widespread popularity throughout the Army. It was determined that the ration would fair better among soldiers if they were enhanced with some sort of supplement or

brand named type items such as: M&M's, Charms, Tootsie Rolls, etc.<sup>7</sup> The first of the supplemental products to be added was shelf-stable bread. This went a long way in having a greater appeal to soldiers.

Now that the ration was acceptable, the MRE had other problems. The spoon was too short and there was no efficient way to heat the entree in the field. This problem was remedied by providing a longer spoon and a heating element that did not require kinetic energy (fire) to heat the entree. This heater is commonly known as the flameless ration heater.

The trend in the U.S. Armed Forces over the past ten years has been to reduce the variety of special purpose rations in the inventory, in favor of a smaller number of dual purpose rations. While this has simplified the logistical burden, it has not created the desired effect of producing a smaller industrial base that is more capable of supporting wartime ration production. In fact, the reverse has occurred, as the Army becomes more creative and innovative with respect to rations, the larger the industrial base becomes. This can in part be attributed to the competitive nature of the commercial market when it comes to bidding on various government contracts.

"The Gulf War serves as an illustration of the resourcefulness of the U.S. forces to strategically feed itself during times of immediate crisis. Soldiers were fed through a combination of field rations and food locally procured through host nation support. The primary operational rations were MREs, they proved to be the ideal ration for this type of operation. Soldiers who were a part of this operation also provided the Army with invaluable feedback on how the MRE could further be improved or modified to better fit these type of situations". <sup>10</sup>

The most recent evolution of the MRE has to do with the Surgeon General's approval of the MRE for continuous consumption up to 21 days. Additionally, over the next three years, the

MRE will transition from a 12 meal variety to a 24 meal variety. <sup>11</sup> Each case will still have 12 meals with menus 1-12 in case #1 and menus 13-24 in case #2. Will the MRE be the operational ration of the future?

One reason the MRE has been around a long time, is because of its flexibility as a general purpose ration. The MRE has been modified 15 times in order to meet the demands of the soldiers and commanders alike. Further, two other menu changes are being worked and will be fielded in 1997. The MRE is an ever evolving ration with improvements being made annually. It is currently composed of approximately 45% commercial items. This is one of the reasons why the MRE is an extremely desirable ration for the soldiers, commanders and the Army. It has been designed to serve the military in virtually any situation. Therefore, there is little doubt that this ration will serve the Army well into the 21th century.

Another reason the MRE has enjoyed such longevity, is because of its long shelf-life. Extending product shelf life has long been one of the principle concerns of the Army. Over the past several years the military has been working with a company that has shown great promise in developing a process that will extend the shelf life of food. Pure Pulse Technologies thinks that their Cool Pure sterilization process can prolong the shelf life of most foods while at the same time maintaining the original flavor of the food.<sup>13</sup>

The process involves shocking the food with a brief burst of high-intensity electricity, killing the microorganisms without changing the taste, color, aroma or consistency of the food itself. Pure Pulse has been able to preserve tomato sauce for up to two years. While the Army has not yet bought into this concept, it looks very promising for the future. This process has the potential to save the Army millions of dollars in a very short period of time. Additionally, if flavor can be preserved over time, it will certainly meet the soldier satisfaction test. However there is one draw back, the process only works on foods that can be pumped through its processor. 14

#### Unitized Group Ration (UGR's)

Although the MRE is the primary operational ration, the Office of the Surgeon General has limited its consumption to 21 days. At that point, the MRE begins to lose some of its acceptability among soldiers. On day 22, the current Army policy and doctrine is, that soldiers will begin to consume the Unitized Group Ration (UGR). The UGR currently is of three types: UGR Heat and Serve (H&S), Cook Prepared, and Shelf Stable. The UGR was designed to act as a bridge between the MRE and the traditional A-Ration. The intent of the unitized ration concept was to consolidate everything required to prepare a meal, into one unit (less perishables). It also incorporated the use of commercial items such as sauces and mixes in an effort to reduce preparation time and labor required in a field environment. This concept would reduce the need to handle rations several time in the field (e.g. at bulk ration break points) as well as enhance and support the battlefield distribution plan.

The future assembly of the UGR will include reductions in all modules from 100 to 50 meals. In addition, the metal tray containers will be replaced by a new polymeric (plastic) tray container. <sup>16</sup> This new design is expected to be fielded in FY 99.

Although the UGR has enjoyed some successes as an operational ration at the National Training Center (NTC), the Joint Readiness Training Center (JRTC), and at the Combined Maneuver Training Center (CMTC), they have experienced some difficulty appealing to soldiers and field commanders. One of the reasons for this lack of appeal, has to do with a change in the type of ration that Commanders choose to feed to soldiers in the late 1980's. Commanders discovered that based on Mission, Enemy, Troops, Terrain, and Training (METT-T) they were (in some cases) able to provide their soldiers with two A- Ration meals while in a field training

environment. Commanders quickly realized that this was a cost effective way to keep soldier morale high in stressful situations. Therefore, field commanders were encouraged to order and feed A-Rations when possible. Soldiers enjoyed this type of treatment and begin to demand A-Ration more often and commanders were obliged to provide them.

The difficulty in doing this was that in the late 1980's and early 1990's the Army removed a significant amount of its cooks from the force-structure. Thus, when commanders demanded more A-Rations in the field, it placed a tremendous burden on the few cooks that were left. Realizing this to be a distressing problem for the soldiers and the Army, the past two Quartermaster Generals have worked diligently to resolve it. The results of their hard work has yielded the addition of three more cooks (per combat battalion) back into the force-structure.

#### **Religious Rations**

"During operation Desert Shield/Storm, the Armed Forces Chaplains Board identified a need for a ration designed for individuals with specific religious dietary requirements or special food preferences. The religions that were identified with special food needs were Jews, Muslims, Buddhists, Hindus, Seventh Day Adventist and Vegetarians".<sup>17</sup>

As a result of the Chaplains efforts, three different rations were developed to meet the needs of the soldiers with different types of dietary requirements. The religious ration may consist of off the shelf items that do not meet the requirements of a standard operational ration except for its nutritional value. The religious rations Kosher, and Halal are ready to eat meals consisting of an entree, accessory packet and a flameless ration heater. Religious rations generally have less then one year of shelf life and are not intended for stockage in a Troop Issue

Subsistence Activity (TISA).<sup>18</sup> The Defense Personnel Support Center (DPSC) recently completed final negotiations and has awarded the first religious ration contract for all the services. These contracts forged between various companies and the military, offers price protection and allows the military to use the firm's storage facilities and their ability to distribute the product for no additional charge. These rations are intended for U.S. Forces only. Other options should be considered when feeding other nationalities as these rations may not fit their needs.<sup>19</sup>

The multifaith MRE that was introduced in 1995, has been renamed the Vegetarian MRE (VMRE). There are currently two types of vegetarian entrees available to soldiers (cheese tortellini and pasta with vegetables) with additional items still being developed. Unlike the Religious Rations, these rations must meet all of the same requirements as a normal MRE. This includes general acceptability and the three year shelf life requirement. The current plan is to package two of these meals into each MRE box. If more are needed by a unit, they may be order under a separate stock number.<sup>20</sup>

The requirements identified by the Chaplain's Board may represent one of the most significant changes in the past fifty years (in terms of its impact on all of the Service's Class I systems). The development of the VMRE is a clear indication that the Services have recognized a trend in the eating habits of soldiers that is consistent with the general population i.e. more vegetarians. The availability of such a specific ration certainly supports the Services' commitment to provide food that safeguards health while at the same time, underlines quality of life.

#### **Humanitarian Daily Ration (HDR)**

Although the Humanitarian Ration is not typically viewed as an operational ration, it is perhaps time that a critical review be conducted to determine its usefulness in the "Full Spectrum Dominance". The Humanitarian Ration was created because it was anticipated that it might become necessary to supply life sustaining subsistence to large numbers of people under adverse weather conditions, possibly hostile circumstances, and unknown logistical problems. 22

"The HDR was initially procured for use in Bosnia. As the world situation changed in the Eastern Block nations, some of these rations were sent to nations of the former Soviet Union. Additionally, approximately 1.1 million of these rations were used in Guantanamo Bay to provide support for the Haitian/Cuban migrants. Stocks are currently being prepositioned in Europe as a contingency measure".<sup>23</sup>

As the U.S. Military becomes more and more involved in Operations Other Than War (OOTW), the need for this type of ration becomes more apparent. It is possible that this ration could have some utility during times of war as well. The example here would be the Gulf War, where thousand of Enemy Prisoners of War (EPW's) surrendered and required some type of subsistence. The HDR could have served a purpose in this situation since the ration itself contains no animal product or by-product. These types rations have the potential to be in great demand over the next few decades, thus enhancing their strategic value.

#### **CLASS I AUTOMATION**

The automation of the Army's Ration System is critical to the success of the Army Field Feeding System-Future (AFFS-F). In <u>Joint Vision 2010</u>, it states: "Service and Defense agencies

will work jointly and integrate with the civilian sector, where required, to take advantage of advance business practices, commercial economies, and global networks".<sup>24</sup> In order for the ration system to meet the challenges of tomorrow, there must be some investments made today to upgrade the system.

"A Tactical Class I automation support system has not yet been implemented within the current logistics system. Tactical Class I operations today are mainly conducted manually using available support and "sneaker net" type communications. During some of the most recent operations (Haiti, Somalia, Southwest Asia and Hurricane Andrew) Class I support was accomplished through the use of innovative techniques employed by some of the Army's most skilled Class I managers". <sup>25</sup>

As the Army moves into the 21st century, it can no longer rely upon the skilled craftiness of food managers to keep soldiers fed. The next full scale conflict promises to be a fast paced and volatile situation. Class I automation must have the flexibility, responsiveness and the precision to keep up. It must be able to track and shift assets even while in transit in order to deliver a tailored food package in support of strategic, operational and tactical operations. At present, the Army has a window of opportunity to lock in on some existing technology that may be able to do all of the above. This system is called the Standard Army Supply System-Objective (SARSS-O).

The importance of Class I integration into the SARSS-O system would simply streamline requisitioning process. Instead of using two or three different requisitioning systems, the requirement could be met by using one system. The exception to this would be special orders.

Additionally, if integrated into the Integrated Combat Service Support System (ICS3) of the

future, each theatre subsistence distribution activity would have total asset visibility via automation links from the lowest levels Ration Break Point (RBP) to the National Inventory Control Point (NICP). This link would also be able to interface with transportation, finance and personnel systems and enable the user to drop information electronically to Material Management Centers (MMCs) and Movement Control Centers (MCCs) as well.<sup>27</sup> Therefore, distribution throughout the theatre of operation would be greatly enhanced.

#### FIELD FEEDING EQUIPMENT IN THE 21st CENTURY.

As the Army moves toward the 21st century and food technology continues to advance, some consideration must be given to food preparation equipment. Will the current family of food preparation equipment be enough to take the Army well into the next century? Will some of the current food preparation practices become obsolete and impractical for future use?

Currently the Army is using the Mobile Kitchen Trailer (MKT) as the field feeding instrument to feed the vast majority of the soldiers today. The original MKT was fielded in 1976. It is anticipated that many of these will remain in service over the next 10-15 years. One MKT can support 300 personnel per day with three meals per day. Two MKT's will support 700 personnel.<sup>28</sup>

There have been some recent improvements to the current model of MKT. The frame has been reinforced making it more durable for cross country travel and some additional equipment has been added to make food preparation easier. Additional modifications are scheduled for the future includes: a commercial ice chest, fluorescent lighting, improved ventilation, replacement of cotton duck fabric with vinyl coated polyester, a commercial can opener and a weatherization

kit.<sup>29</sup> There is currently no target date set for these modifications to be implemented as they are still being discussed among the various agencies and directorates.

In addition to the improvements that are being discussed for the MKT, a new field cooking unit is currently under development called the Containerized Kitchen. This kitchen is designed to replace the MKT on the battlefield over time. This means that as the MKT reaches it's expected wearout date, it will be replace by this modern field kitchen.

The Army appears to be well on its way to providing the right type(s) of equipment for future field operations. The modifications that are currently ongoing combined with anticipated new fieldings should be adequate to sustain the force well into the next century. Although the Army appears to be well prepared for feeding operations in the field, the garrison operation has also received a great deal of attention as of late.

#### **GARRISON OPERATIONS**

#### Prime Vendor

Experts in the field of Military Food Service say that generic foods, (used in garrison feeding) produced to military specifications, will be only a memory by calendar year 1998.

Around the world, military installations have begun the process of replacing this type of food with fresher, commercial brand-named products. The impetus for these changes came from a military wide study, conducted over a period of two and one half years. Incorporated into this study was a program called "Prime Vendor". 30

Essentially, Prime Vendor is designed to replace most, if not all of the traditional type military food as well as how it is procured and stored for garrison feeding. Contracts are made

with commercial food vendors and they in turn become responsible for storage and delivery, thus reducing much of the overhead that the military had incurred in the past. These regional vendors will deliver food directly to military dining facilities within a few days of receiving an order, just as they would to a restaurant or other institution.<sup>31</sup> This new innovation sounds a lot like "Just in Time Logistics".

Prime Vendor is intended to provide the soldiers with more variety, and a fresher product. Additionally, soldiers will be able to identify more with the product, as it will be a brand named item that he or she is accustomed to seeing back home in Mom's kitchen or their favorite restaurant. Prime Vendor will not only impact on what the soldier receives on his or her plate but also on the way in which the dining facility is managed. Many of the managerial processes will be simplified. Things such as the way the food line is managed, the ordering process, and the food inspection procedure (usually conducted by Army Veterinarians) is being restructured.<sup>32</sup>

In the so called "good old days" DPSC procured all the food for the military. The food was usually sent to a military depot for storage. Then it would go to a military installation or post TISA, where the food would again sit until needed by the soldiers.<sup>33</sup> Needless to say, this was a very inefficient process. With Prime Vendor in place, this process will nearly be eliminated.

As it relates to the Army, Prime Vendor will represent a complete cultural change in the way food managers do business. Dining facility managers will be able to order their food products electronically directly from the vendor. This will eliminate the Army's need for large centralized storage facilities and change the way the Army's Veterinarians perform their mission. Prime Vendor will be in place in CONUS by the end of FY 97. Negotiations are ongoing for

future OCONUS implementation in Alaska, Hawaii, and USAREUR. Additional plans include implementation in: Korea by FY 98, Guam by FY 97, and Puerto Rico by FY 98.<sup>34</sup> Prime Vendor has generated lots of excitement across all of the Services'. It appears to be the panacea (in terms of garrison operations) that everyone has been waiting for. The potential worth of this venture seems to be unlimited in terms of it's impact on troop morale and the managerial experience that the program provides for military food service personnel. This is perhaps the greatest innovation to the garrison food service operation since the elimination of the use of soldiers as kitchen police (KP).

#### **NEW FOOD TECHNOLOGIES**

#### What will the Army eat?

Advances in food science, biotechnology and food processing is currently being studied by researchers all across the United States (This includes the Army's own Natick Laboratories in Massachusetts). There is no doubt that the significance of these studies will impact on the Army's feeding plan and food choices after the year 2000.

Miniaturization of fruits and vegetables is quickly becoming a reality. Scientists have already produced miniature lettuce and watermelons.<sup>35</sup> These efforts will go a long way in reducing the amount of food waste experienced commercially as well as in the Army. Another project that scientists are working on, is edible coatings for edible plants.

"These tasteless coatings protect peeled or cut fruits and vegetable from air exposure, water loss and spoilage from bacteria, thus reducing the amount of bacterial type infection. The same type of coating has already been proven to prolong the shelf life of fresh produce such as

apples and tomatoes. These coatings have even been used to act as a protective barrier between pizza crust and its toppings to prevent sogginess. These coatings have also been used on bakery products to keep them from becoming stale and dry". 36

#### **Food Irradiation**

There are a number of problems that are associated with feeding soldiers that have an adverse impact on food quality and will continue to have some impact into the next century. Given that much of the Army's food supply must be shelf stable, the only acceptable food preservation options available today are thermostabilization, dehydration and freeze drying.<sup>37</sup> Irradiation is another option that is not currently in widespread use in the U.S., but should be considered.

"Irradiation treatment in moderate doses, destroys the microorganisms that are present in a particular food. The food can be stored in sealed containers at room temperature for years without spoilage. Radiation used to sterilize meats and poultry products, has been rated superior to its canned counterparts in terms of texture, appearance, flavor, and vitamin retention". 38

One of the concerns that is often voiced about irradiated foods, is that new compounds could be formed within the products as a result of the irradiation process. The chemical changes that take place are no different than those that take place during cooking, canning, or commercial food processing. Another concern that is often raised is the effect that irradiation might have on critical food nutrients. Numerous tests were conducted by scientists across the country and it was learned that there was no significant loss in nutrients in any foods with perhaps the exception of pork. With pork it was learned that the loss of thiamin, (although not significant) appeared to be higher in pork then in most other meat products.<sup>39</sup>

The fact that irradiation extends the shelf life of most foods, has strategic implications as well as application for all of the Services'. This means that the Services' would in the future be

able to store foods for extended periods of time, without fear of spoilage and contamination. This would further mean that foods in the future could be prepositioned in much the same fashion as equipment is done today (MRE's are now being prepositioned). This will provide the regional commander with another combat multiplier that is close at hand. Unfortunately, a common misconception that has impacted on the speed at which the military has embraced this process is that the American public has not up to this point accepted the idea of consuming radiated food.

#### Other New Developments

When the United States Army is called upon to deploy to a foreign land, more often than not, soldiers and units will deploy with only their basic load of operational rations. This usually equates to MRE's. Imagine being able to deploy to an aired environment, like the deserts of the Middle East or to a third world nation that is agriculturally weak and immediately on day one having fresh fruits and vegetable to eat. This will be possible by the year 2010. Scientific engineers have recently developed a new process that makes it easier to rehydrate produce with little loss of flavor, texture or nutritional value. The process is called "explosion puffing". It is now being used on produce like carrots and blueberries in the United States and on potatoes in Canada. Experimentation is also ongoing on other produce. Eventually, these products in miniature form, could be introduced into the MRE packet, thus affording the deploying soldier the opportunity to take fresh fruits and vegetables with him or her to the battlefield.

One of the objectives of the U.S. Army Soldier Systems Command is to demonstrate that certain natural food constituents can enhance mental and physical performance and to incorporate them into existing rations. These ration components are referred to as: Performance-Enhancing Ration Components (PERC's). Some of the accomplishments of this command over the past twelve months include: The formulation of prototype solid food items, development of a generic energy bar, optimizing the ERGO

(Energy-Rich, Glucose-Optimized) drink, and demonstration of preferences for PERCs in field situations.<sup>41</sup>

"The intent of this program, is to utilize carbohydrates, caffeine, glutamine, tyrosine and choline as potential enhancers in foods. It is believed that these enhancers will cause soldiers to performance better in stressful situations. This will also enable personnel to measure performance in the laboratory or field situations and to present PERCs in packages that communicate their benefit and assure their consumption".<sup>42</sup>

Nearly everyone has heard about the genetically modified tomato by now. In the future, some of the soldiers favorite foods will go through this process. Some other possibilities being explored are: 1) healthier french fries and potato chips made from potatoes with more starch and less water. The potato would also absorb less oil during frying. 2) Popping corn with enhanced taste so less salt and butter is needed. 3) Fruits and vegetables with high levels of antioxidants and anticancer substances. 4) Plants that can kill the pest that eat them.<sup>43</sup>

Recently, an article appeared in the <u>Army Times</u> that discussed the merits of a proposal that would provide all soldiers with the Basic Allowance for Subsistence (BAS).<sup>44</sup> On the surface, this might sound like a good idea, but to personnel in the food service business, it would mean that they would have to compete even harder for the soldiers' business. If all soldiers received BAS, then one could assume that eating in an on post dining facility would become an option. This would mean that facility managers, would have to be even more innovative then ever before.

Currently, plans are being made for Dining Facilities to create an A La Carte Menu.

Soon we may even see an all-you-can-eat menu. The old "Mess Halls" of the past, may slowly be transitioning into a restaurant style establishment, with the same variety as the ones that you

might expect to find downtown. In the future we may see soldiers bringing their families to the dining facility for an evening meal.

#### **CONCLUSION**

The end of the Cold War and the ensuing world events, have changed the nature of the threat facing the Army. The Army has gone from a forward deployed force, to a force projection force. This shift in strategy requires more mobility, responsiveness and flexibility from both the garrison and field feeding systems. The Army Field Feeding System-Future, is designed to meet all of the operational needs of the commander on the battlefield, while the garrison operation will continue to provide superior support when soldiers are not engaged.

The challenge for the logisticians of tomorrow, is to be trained and disciplined enough to be able to function across the full spectrum of the logistical system. They must be ready and able to meet all the Class I challenges of the future. Further, they must be situationally aware and able to sustain dynamic supply velocity, throughout the theatre of operation. Although the principles of Focused Logistics will carry the force a long way into the future, ultimately the well trained and well feed soldier will be the deciding factor as to who will win the next battle.

The question of whether the Army's plan for feeding the force beyond the year 2000 is viable and adequate, can be answered **YES**. Based on the changes that have already been made and the planned fielding of various pieces of equipment, the Army appears to be well on its way to providing for the subsistence needs of the soldiers in the 21st century. Dinner is served.

#### **ENDNOTES**

- <sup>1</sup> John D. Greaves III, "Vision 2010 for Food Service," information paper for Director Army Center for Excellence, Subsistence, Fort Lee, 22 August 1996.
  - <sup>2</sup> Ibid.
  - <sup>3</sup> Ibid.
  - <sup>4</sup> Ibid.
- <sup>5</sup> Department of the Army, <u>Logistic Vision for a Revolution in Military Logistics (RML, DRAFT)</u> (Washington: U.S. Department of Army, 4 October 1996), 6.
- <sup>6</sup> Eldon E. Askew, Robert E. Feeney, Deborah A. Jezior, "The Development and Evolution of the U.S. Army Field Ration," <u>Nutrition Review</u> 53 (August 1995): 8. UMI ProQuest, General Periodicals Ondisc, item 02531462.
- <sup>7</sup> Judith M. Aylward, "Meal, Ready-to-Eat (MRE), Individual," information paper for Director, Sustainability Directorate, Natick, 29 November 1995.
  - <sup>8</sup> Ibid.
- <sup>9</sup> Eldon E. Askew, Robert E. Feeney, Deborah A. Jezior, "The Development and Evolution of the U.S. Army Field Ration," <u>Nutrition Review</u> 53 (August 1995): 8. UMI ProOuest, General Periodicals Ondisc, item 02531462.
  - <sup>10</sup> Ibid., 225
- <sup>11</sup> LTC Carol A. Kornhoff, "Army Field Feeding System-Future and Ration Policy," information paper for Deputy Chief of Staff for Logistics, Washington, 24 June 1996.
- <sup>12</sup> Robert J. Amirault, "Development and Use of the MRE," information paper for Director Army Center of Excellence, Subsistence, Fort Lee, 17 July 1996.
- <sup>13</sup> Bill Duesing, "21st Century Food," 13 March 1996, <a href="http://eko/sevr.vo.slu.se/docs/www...-ag/600-649/641/-21st-century-food">http://eko/sevr.vo.slu.se/docs/www...-ag/600-649/641/-21st-century-food</a>, 22 December 1996.
  - <sup>14</sup> Ibid.
- <sup>15</sup> LTC Carol A. Kornhoff, "Army Field Feeding System-Future and Ration Policy," Information Paper for Deputy Chief of Staff for Logistics, Washington, 24 June 1996.

- <sup>16</sup> Robert J. Amirault, "Unitized Group Ration (UGR)," information paper for Director, Army Center of Excellence, Subsistence, Fort Lee, 24 January 1997.
- <sup>17</sup> LTC Carol A. Kornhoff, "Religious and Vegetarian Meals," Information Paper for the Deputy Chief of Staff for Logistics, Washington, 31 July 1996.
- <sup>18</sup> U.S. Department of Defense, <u>Solicitation/Contract/Order for Commercial Items</u> (Philadelphia: U.S. Department of Defense, June 1996), 3.
  - <sup>19</sup> Ibid., 5-6
  - <sup>20</sup> Kornhoff, "Religious and Vegetarian Meals,".
- <sup>21</sup> U.S. Department of Defense, <u>Joint Vision 2010</u>, (Washington: U.S. Department of Defense, July 1996), 26.
- <sup>22</sup> Col Larry Edmond, "History of the Humanitarian Daily Ration", Memorandum for the Record, Philadelphia, August 1996.
  - <sup>23</sup> Ibid.
  - <sup>24</sup> U.S. Department of Defense, <u>Joint Vision 2010</u>, 24.
- <sup>25</sup> John D. Greaves III, "Supply Management Modernization-Class I", information paper for Director Army Center of Excellence, Subsistence, Fort Lee, 10 January 1997.
  - <sup>26</sup> U.S. Department of Defense, <u>Joint Doctrine 2010</u>, 24.
- <sup>27</sup> U.S. Department of the Army, <u>Logistics Vision for a Revolution in Military Logistics</u> (<u>RML DRAFT</u>), (Washington: U.S. Department of the Army, 4 October 1996), 21.
- <sup>28</sup> LTC Carol A. Kornhoff, "Capabilities and Requirements of the Mobile Kitchen Trailer," information paper for Deputy Staff of Staff for Logistics, Washington, 22 August 1996.
- <sup>29</sup> Timothy Benson, "Mobile Kitchen Trailer Improvements," information paper for the Program Manager, Washington, 22 November 1996.
- <sup>30</sup> Defense Personnel Support Center, <u>Prime Vendor Guide Book</u> (Philadelphia: U.S. Army Defense Personnel Support Center, April 1996) 3.
- <sup>31</sup> G.E. Willis, "Today's Army Dining is Just Delectable," <u>Springfield Army Times</u>, 23 December 1996, sec. Personnel, p. 10.

<sup>32</sup> Ibid.

<sup>&</sup>lt;sup>33</sup> Ibid.

<sup>&</sup>lt;sup>34</sup> Defense Personnel Support Center, <u>Prime Vendor Guide Book</u>, 5.

<sup>&</sup>lt;sup>35</sup> Sharon Denny, "What Will You be Eating in the 21st Century?" <u>Current Health 2</u>, 22 (September 1995): 25. UMI ProQuest, General Periodicals Ondisc, item 02495195.

<sup>&</sup>lt;sup>36</sup> Ibid.

<sup>&</sup>lt;sup>37</sup> Robert T. O'Brien, <u>Food Irradiation Update and Cost Analysis</u> (Massachusetts: Natick, 1991), 1.

<sup>38</sup> Ibid.

<sup>&</sup>lt;sup>39</sup> Doris Stanley, "Irradiation Helps Keep Meat Safe," <u>Agricultural Research</u>, 43 (November 1995) 11. UMI ProQuest, General Periodicals Ondisc, item 02617112.

<sup>&</sup>lt;sup>40</sup> Sharon Denny, "What Will You be Eating in the 21st Century?", <u>Current Health 2</u>, 22 (September 1995): 26. UMI ProQuest, General Periodicals Ondisc, item 02495195.

<sup>&</sup>lt;sup>41</sup> Irwin A.Taub, "Performance-Enhancing Ration Components" information paper for Director Sustainability Directorate, Natick, 1996.

<sup>&</sup>lt;sup>42</sup> Ibid.

<sup>&</sup>lt;sup>43</sup> Sharon Denny, "What will You be Eating in the 21st Century?" <u>Current Health 2</u>, 22 (September 1995): 26. UMI ProQuest, General Periodicals Ondisc, item 02495195.

<sup>&</sup>lt;sup>44</sup> Andrew Compart, "Showdown Over Subsistence Cash," <u>Springfield Army Times</u>, 30 December 1996, sec. This Week, p. 3.

#### **BIBLIOGRAPHY**

- Amirault, Robert J., "Development and Use of the MRE." Information Paper for Director Army Center of Excellence, Subsistence, Fort Lee, 17 July 1996.
- \_\_\_\_\_. "Unitized Group Ration (UGR)." Information Paper for Director, Army Center of Excellence, Subsistence, Fort Lee, 24 January 1997.
- Askew, Eldon E., Robert E.Feeney, and Deborah A. Jezior. "The Development and Evolution of the U.S. Army Field Rations." <u>Nutrition Review</u> 53 (August 1995): 221-225.UMI ProQuest, General Periodicals Ondisc, item 02531462.
- Author Anonymous. "Fighting Foodborne Disease with Radiation." <u>Consumer's Research</u>
  <u>Magazine</u> 79 (September 1996): 28-32. UMI ProQuest, General Periodicals Ondisc, item 02988711.
- Author Unknown. "The "K" Ration Stands for Kosher." New York Times, 8 July 1995, sec. 1A, p.2.
- Aylward, Judith M., Logistics Action Officer. "Meal Ready to Eat (MRE) Individual."

  Information Paper for Director, Sustainability Directorate. Natick, 29 November 1995.
- Benson, Timothy, Product Manager. "Mobile Kitchen Trailer Improvements." Information Paper for the Program Manager. Washington, 22 November 1996.
- Compart, Andrew. "Showdown Over Subsistence Cash." <u>Springfield Army Times</u>, 30 December 1996, sec. This Week, p. 3.
- Denny, Sharon. "What Will You be Eating in the 21st Century?" <u>Current Health 2</u> 22 (September 1995): 25-27. UMI ProQuest, General Periodicals Ondisc, item 02495195.
- Duesing, Bill. "21st Century Food," 13 March 1996, <a href="http://ekolserv.vo.slu.se/docs/www...ag/600-649/641/-21st-century-food">http://ekolserv.vo.slu.se/docs/www...ag/600-649/641/-21st-century-food</a>, 22 December 1996.
- Edmond, Larry, Chief of Readiness. "History of the Humanitarian Daily Ration." Memorandum for Record. Philadelphia: August 1996.
- Fleming, Dave, Action Officer. "Automation Tactical Class I Capability." Information Paper for CASCOM Commander. Fort Lee, 16 January 1996.
- Greaves, John D. III, Doctrine Writer, "Supply Management Modernization-Class I."

  Information Paper for Director Army Center of Excellence, Subsistence. Fort Lee,

  10 January 1997.

- . "Vision 2010 for Food Service." Information Paper for Director Army Center of Excellence, Subsistence. Fort Lee, 22 August 1996.
- Kornhoff, Carol A., Logistics Action Officer. "Army Field Feeding System-Future and Ration Policy." Information Paper for Deputy Chief of Staff for Logistics. Washington, 24 June 1996.
- \_\_\_\_\_. "Capabilities and Requirements of the Mobile Kitchen Trailer". Information Paper for Deputy Chief of Staff for Logistics, Washington: 22 August 1996.
- \_\_\_\_\_. "Humanitarian Daily Ration." Information Paper for Deputy Chief of Staff for Logistics. Washington, 1 November 1996.
- \_\_\_\_\_. "Religious and Vegetarian Meals." Information Paper for Deputy Chief of Staff for Logistics. Washington, 31 July 1996.
- Natick Laboratories. "Electric Spaghetti Sauce." Tech Update October 1996: 20-22.
- O'Brien, Robert T. Food Irradiation Update and Cost Analysis. Massachusetts: Natick, 1991.
- Stanley, Doris. "Irradiation Helps Keep Meat Safe." <u>Agricultural Research</u> 43 (November 1995) 10-12. UMI ProQuest, General Periodicals Ondisc, item 02617112.
- Taub, Irwin A., Product Manager, "Performance-Enhancing Ration Components." Information Paper for Director Sustainability Directorate, Natick: 1996.
- U.S. Army Defense Personnel Support Center. <u>Prime Vendor Guide Book</u>. Philadelphia: U.S. Army Defense Personnel Support Center, April 1996.
- U.S. Department of the Army. "Logistics Vision for a Revolution in Military Logistics (RML, DRAFT). Washington: U.S. Department of the Army, 4 October 1996.
- U.S. Department of Defense. "History of the Humanitarian Daily Ration." Memorandum for Record, Defense Personnel Support Center. Philadelphia, December 1995.
- U.S. Department of Defense. <u>Joint Vision 2010</u>. Washington: U.S. Department of Defense, July 1996.
- U.S. Department of Defense. <u>Solicitation/Contract/Order for Commercial Items</u>. Philadelphia: U.S. Department of Defense, June 1996.
- Willis, G.E.. "Today's Army Dining is Just Delectable." <u>Springfield Army Times</u>, 23 December 1996, sec. Personnel, p. 10.